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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/965,141

09/26/2001

Laurent Le-Faucheur

TI-32357

6255

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01/26/2005

TEXAS INSTRUMENTS INCORPORATED

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EXAMINER

WARREN, DAVID S

ART UNIT

PAPER NUMBER

2837

DATE MAILED: 01/26/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/965,141

Applicant(s)

LE-FAUCHEUR ET AL.

Examiner

David S. Warren

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 26 September 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1, 2 and 6-13 is/are rejected.
- 7) ☒ Claim(s) 3-5 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 September 2001 is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 5/23/02; 9/26/01.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### *Claim Objections*

Claim 11 objected to because of the following informalities: In claim 11, line 9, the word "and" implies that claim 11 was intended to contain a further limitation. The period at the end of line 8 implies that no further limitation was intended. Appropriate clarification is required.

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 2, and 6 – 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wang et al. (5,814,750) in view of Jenkins (5,744,739). Both Wang and Jenkins disclose sampling a "analysis" waveform and reproducing a "synthesis" waveform. Regarding claim 1, Wang discloses the use of accessing a digital analysis waveform (104; fig. 2), i.e., a prerecorded waveform as defined by Applicant (all musical notes inherently contain duration, pitch, attack and decay portions), a synthesis waveform (213; duration and pitch are inherent in all musical tones). Wang does not

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disclose the use of computing timing marks on either the analysis or synthesis waveforms. As defined by the Applicant, timing marks are the “starting position of each period” and that timing marks may be arbitrarily set (see Abstract). Jenkins uses a method (col. 17, last paragraph) to loop sections of a raw sample (i.e., analysis waveform) to produce a “sample loop” (i.e., a synthesis waveform), wherein both the raw sample and sample loop have starting address locations (i.e., timing marks). The sample loop (or synthesis waveform) of Jenkins contains “frequency [i.e., pitch], timbre, amplitude and duration.” Jenkins also discloses the generation of the attack and decay portions of the synthesis waveform (fig. 14; also see the paragraph bridging columns 20 and 21). It would have been obvious to one of ordinary skill in the art to combine the teachings of Jenkins and Wang to obtain a method of synthesizing music in a digital system wherein the synthesized waveform is generated in accordance with timing marks associated with the analysis waveform. The motivation for making this combination is that both Wang and Jenkins seek to reduce memory requirements and thus cost (col. 1, lines 52 – 59 of Jenkins). Regarding claim 2, both Wang and Jenkins disclose the use of cosinus windows in computing a synthesis waveform (Wang, like Applicant’s specification, discloses a “Hanning window”, col. 2, lines 28 - 30; Jenkins discloses a cosine window, col. 7, lines 33 – 35). The Examiner interprets “period  $m$ ” and “period  $m-1$ ” as merely being adjacent periods which is inherent in any multiperiod sound. The “scaling factor” of Wang is equivalent to Applicant’s weighting factor (Wang col. 2, paragraph 4, lines 46 – 64; Jenkins also discloses a scaling function, col. 12, lines 46 – 50). Regarding claim 6, within the context of synthesizing a note of different

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pitch from that of a raw sample, the attack portion duration of the synthesis waveform will be “approximately equal” to that of the analysis waveform. In other words, the attack portion a raw sampled note C1 would be “approximately equal” to that of synthesized C#1. Regarding claim 7, both Jenkins and Wang disclose the use of variable sampling rates to extract new pitches from a stored sample, an increased (or decreased) sample rate will decrease (or increase) the period – this “stretching” of the period is equivalent to “time warping” the period. Jenkins also discloses that high frequency pitches decay rapidly (col. 2, lines 17 – 21) – thus when Jenkins synthesizes higher pitched sounds, the decay must be shorter (i.e., “time warped”). Regarding claim 8, both Jenkins and Wang disclose producing a second note from a raw sampled first note, it would render the inventions of Wang and Jenkins inoperable, if notes outside the range of plus or minus one octave were not playable. In other words, if middle C were sampled, Wang and Jenkins would need to provide the two octaves centered near middle C, otherwise music from the standard popular and classical repertoire could not be performed. Regarding claim 9, Jenkins discloses the use of “more than one instrument” (col. 11, lines 39 – 41). Regarding claim 10, Jenkins and Wang disclose techniques to synthesize musical pitches from a single raw sample (i.e., analysis waveform). While they are silent as to how many waveforms are sampled, it appears that a single analysis waveform is used for the entire range of the instrument (i.e., at least “one waveform for a range of at least two octaves).

Claims 11 – 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wang et al. and Jenkins in view of Lee (6,025,553). The teachings of Wang and Jenkins are discussed supra. Regarding claim 11, Jenkins discloses a memory for holding a plurality of instrumentally correct digital waveforms corresponding to a plurality of instruments (col. 11, lines 39 – 41). While Jenkins discloses an invention which uses MIDI (which includes the ability to process and store a musical score and melody), Jenkins does not specifically claim a processor nor a memory for storing a score and/or melody. Lee discloses the use of a processor containing a memory (5) for storing a musical score (i.e., the accompaniment of Lee is equivalent to a score), and a second processor for storing the synthesized melody (11a, 11b; fig. 5). It would have been obvious to one of ordinary skill in the art to combine the teachings of Wang, Jenkins and Lee to obtain a music synthesizing digital system comprising a processor and memory for storing a musical score and melody. The motivation for making this combination is stated in Jenkins: “What is needed is a wavetable synthesizer having a substantially reduced memory size and a reduced cost while attaining an excellent audio fidelity.” Regarding claim 12, Wang (212), Jenkins (output of fig. 15), and Lee (124), all show a device for playing a synthesized melody signal. Regarding claim 13, Lee discloses the use of a display (7, figs. 3 and 4), a radio frequency circuit (20, fig. 4) and an aerial (24) connected to the RF circuitry.

***Allowable Subject Matter***

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Claims 3 – 5 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The prior art does not disclose the use of calculating a first period using a first cosinuous window, calculating a second period having a second cosinuous window, wherein the first cosinuous window operates on two adjacent periods and the second cosinuous window operates on two adjacent periods shifted by one period from the first conscious window.

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The patents to Suzuki et al. (5347478), Kutaragi et al. (5086475), and Kaneko (5329062) all disclose the use of producing synthesis waveforms from analysis waveforms.

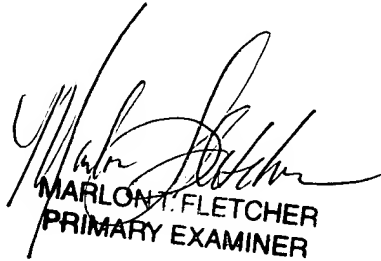
Any inquiry concerning this communication or earlier communications from the examiner should be directed to David S. Warren whose telephone number is 571-272-2076. The examiner can normally be reached on M-F, 9:30 A.M. to 6:30 P.M..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Martin can be reached on 571-272-2800 ext 37. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

dsw



MARLON T. FLETCHER  
PRIMARY EXAMINER